



## **APPENDIX E TO LPC-PA2**

### **INSTRUCTIONS FOR PREPARING A CONSTRUCTION DOCUMENT FOR A CHEMICAL AND PUTRESCIBLE WASTE LANDFILL**

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains what should be provided in a Quality Assurance Program.

#### **I. Applicability and Qualifications**

- A. Identify each structure subject to the procedures and organizational framework for testing, observation, monitoring and documentation of the quality assurance requirements in 35 IAC 811 Subpart E.
- B. Provide assurance that the operator will designate a third party contractor as the Construction Quality Assurance Officer (CQA officer) with the following responsibilities and qualifications:
  - 1. The CQA officer will be responsible for inspections, testing and other required activities.
  - 2. That the CQA officer will be an Illinois Registered professional engineer.

#### **II. Activities**

- A. Describe activities which will demonstrate compliance with the following provisions:
  - 1. How the CQA officer will provide supervision and explain the procedures for writing a daily summary report. It is recommended at minimum the officer personally be present on a weekly basis and more often during critical construction activities. Structures subject to quality assurance are:
    - a. Compaction of foundations and subgrades.
    - b. Installation of clay liners, geomembrane liner component, slurry trenches, cutoff walls; leachate collection system and gas control facilities.
    - c. Application of final cover.
    - d. Construction of ponds, ditches, lagoons and berms.
  - 2. When the CQA officer is absent that the following document will be provided:
    - a. A written explanation for the CQA officer's absence.

- b. A written designation of the person who will exercise professional judgement for the CQA officer and documentation that this person can function effectively.
  - c. A written statement by the CQA officer that he assumes full personal responsibility for inspections and reports prepared by the CQA designate.
- 3. Provide for each structure subject to this program, the activities an inspector will be responsible for.

### III. Sampling

- A. Provide a detailed description of a sampling program for each covered structure. Include the statistical sampling techniques and specific criteria for the acceptance or rejection of materials or structures and operations.

### IV. Reports

- A. Provide the information to be included in the daily summary report for each covered structure in accordance with 35 IAC 811.505(a). Include sample report forms, list of test equipment, materials etc.
- B. Provide the information to be included in the daily inspection report for each covered structure in accordance with 35 IAC 811.505(b) and (c). Include sample report forms, inspection activities, sampling etc.
- C. Provide the information to be included in the acceptance reports for each covered structure in accordance with 35 IAC 811.505(d). Include sample reports and any other applicable information.

### V. Additional Information is Required for Consideration of Foundations and Subbases

- A. A site investigation must include how it was carried out in accordance with the plans and how any unexpected conditions or modifications are to be shown and explained on as built plans.
- B. The CQA officer must observe the soil and rock surfaces for joints, fractures, depressions and sound deposits and has documented their filling or replacement.
- C. Documentation must ensure there were no moisture seeps and that soft, organic or other undesirable material was removed.

### VI. Additional Information is Required for the Construction of the Test Liner and Fill Before Construction of the Actual, Full-Scale Compacted Earth Liner

- A. A plan to document how the following were or will be met must be provided:
  - 1. The test liner was constructed from the same soil material, design specifications, equipment and procedures as proposed for the full-scale liner;
  - 2. The test fill was at least four times the width of the widest piece of equipment to be used;
  - 3. The test fill was long enough to allow the equipment to reach normal operating speed before reaching the test area;

4. At least three lifts were construct;
  5. The test fill were tested as described below for each of the following physical properties using tests to ensure a statistically valid sample size:
    - a. Field testing techniques shall be used to determine the hydraulic conductivity.
    - b. Samples shall also be tested in the laboratory for hydraulic conductivity. The laboratory results shall be evaluated to determine if there is a statistical correlation to the field testing results.
    - c. Other engineering parameters, including but not limited to particle size distribution, plasticity, water content, and in-place density, that are needed to evaluate the full-scale liner shall be determined; and
  6. Additional test fills were constructed for each time the material properties of a new borrow source changes or for each admixture or change in equipment or procedures.
- B. If documentation is available to demonstrate that a previously constructed liner meets the requirements of Part VI above construction of a test fill or the requirements for an additional test fill may be omitted. Documentation of how a full-scale liner or a test fill has been previously constructed should be provided.
- C. State how the CQA officer will inspect the construction and testing of test fills to ensure that these requirements are met. During construction of the actual, full-scale compacted liner, the CQA officer shall ensure the following:
- a. Use of same compaction equipment as used in test fill;
  - b. Use of same procedures, such as number of passes and speed;
  - c. Uniformity of coverage by compaction equipment;
  - d. Consistent achievement of density, water content and permeability of each successive lift;
  - e. Use of methods to bond successive lifts together;
  - f. Achievement of liner strength on sidewalls;
  - g. Contemporaneous placement of protective covering to prevent drying and desiccation, where necessary;
  - h. Prevention of the placement of frozen material or the placement of material on frozen ground.
  - i. Prevention of damage to completed liner sections; and
  - j. That construction proceeds only during favorable climatic conditions.
- VII. Additional Information Required for the Construction of a Geomembrane Liner. Describe the Information Which Will be Provided to Ensure the Following Requirements Have Been Met:
- A. That the bedding material contains no undesirable objects;

- B. That the placement plan has been followed;
- C. That the anchor trench and back-fill are constructed to prevent damage to the geomembrane;
- D. That all tears, rips, punctures, and other damage are repaired, and
- E. That all geomembrane seams are properly constructed and tested in accordance with the manufacturer's specifications.

VIII. Additional Information is Required for the Construction of Leachate Collection System. Describe the Information Which Will be Provided to Ensure the Following Have Been Met:

- A. That pipe sizes, material, perforations, placement and pipe grades are in accordance with the design.
- B. That all soil materials used for the drainage blanket and graded filters met the required size and gradation specifications in the design plan are placed in accordance with the design plan.
- C. That all prefabricated structures are inspected for conformity with design specifications and for defective manufacturing.

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